CLAIMS

1. Method for minimizing intracell and/or intercell interference for a data transmission system comprising a scheduler (2) that manages at least a first cell (1) by communicating with a first base station (BS) communicating with a number of user equipments (UE1-UE4) in the first cell via a first antenna system (Rx, Tx) effective in one or more cell segments (CS1, CS2) covering certain directions in the first cell (1), where the method comprises the steps of;

-the first base station (BS) receiving information from the user equipments (UE1-UE4) in the first cell (1), by means of the first antenna system (Rx);

-the first base station (BS) communicating the information to the scheduler (2);

-the scheduler (2) identifying each user equipment (UE1-UE4) in the first cell (1);

-the scheduler (2) identifying in which cell segment (CS1, CS2) each user is positioned;

-the scheduler (2) allotting a first time slot (TS1) to at least one user equipment (UE1) in a first cell segment (CS1) in the first cell (1);

-the scheduler (2) allotting the first time slot also to at least one user (UE3) equipment in a second cell segment (CS2) in the first cell (1);

-the antenna system (Tx) sending information from the base station (BS) simultaneously to all user equipments (UE1, UE3) allotted to the first time slot.

2. Method according to claim 1, characterized in that the scheduler (2) manages also a second cell (6) by communicating with the first base station (BS) or a second base station communicating with a number of user equipments (UE1-UE4) in the second cell (6) via the first antenna system (Rx, Tx) or a second antenna system effective in one or more cell segments (CS1, CS2) covering certain directions in the second cell (6), where the method comprises the steps of;

-the first base station (BS) or the second base station receiving information from the user equipments in the second cell, by means of the first antenna system (Rx) or the second antenna system;

-the first base station (BS) or the second base station communicating the information to the scheduler (2);

-the scheduler (2) identifying each user equipment (UE1-UE4) in the second cell (6);

-the scheduler identifying in which cell segment (CS1, CS2) each user equipment (UE1-UE4) is positioned;

-the scheduler allotting the first time slot (TS1) to at least one user equipment (UE1) in a first cell segment (CS1) in the second cell (6);

-the scheduler allotting the first time slot (TS1) also to at least one user equipment (UE3) in a second cell segment (CS2) in the second cell (6).

3. Method according to claim 1 or 2, characterized in that the scheduler (2) divides the cell (1, 6) into the cell segments (CS1, CS2) on the basis of intracell and/or intercell interference determined by the scheduler by using spatial information about where each user equipment (UE1-UE4) is situated in the cell (1, 6).

4. Method according to any one of the preceding claims, characterized in that the scheduler (2) allots the time slots to the user equipments (UE1-UE4) on the basis of intracell and/or intercell interference determined by the scheduler (2) by using the spatial information about where each user equipment is situated in the cell (1, 6).

5. Method according to any one of the preceding claims, characterized in that the antenna system (Tx) comprises an adaptive antenna transmitting into each cell segment (CS1, Cs2) using beam forming functions.

6. Method according to any one of the previous claims, characterized in that only one user equipment in each cell segment is allotted to the first time slot (TS1) such that the antenna system (Tx) sends information to only one user equipment in each cell segment.

7. Method according to any one of claims 1-5, characterized in that two user equipments in at least the first cell segment are allotted to the same time slot (TS1).

8. Method according to any one of the previous claims, characterized in that the antenna system (Tx) sends information from the base station simultaneously to all user equipments allotted to the first time slot.

9. Method according to any one of the preceding claims, characterized in that the scheduler (2) uses direction of arrival in order to identify the position of the user equipments.

10. Method according to any one of the preceding claims, characterized in that the antenna system (Tx) sends simultaneously to all user equipments in the system allotted to the same time (TS1) slot according to a time slot sequence.

11. Method according to any one of the preceding claims, characterized in that the information sent by the antenna system (Tx) may be used for both uplink or downlink transmission.

12. Method according to any one of the preceding claims, characterized in that the transmission system uses HSDPA.

13. Method according to any one of the preceding claims, characterized in that the scheduler (2) allots the first time slot (TS1) and/or divides the cell into cell segments (CS1, CS2), based on the minimum intercell and/or intracell interference.

14. Arrangement for minimizing intracell and/or intercell interference for a data transmission system comprising a scheduler (2) that manages at least a first cell (1) by communicating with a first base station (BS) communicating with a number of user equipments (UE1-UE4) in the first cell via a first antenna system (Rx, Tx) effective in one or more cell segments (CS1, CS2) covering certain directions in the first cell (1), where the arrangement comprises;

-the first base station (BS) arranged to receive information from the user equipments (UE1-UE4) in the first cell (1), by means of the first antenna system (Rx);

-the first base station (BS) arranged to send the information to the scheduler (2);

-the scheduler (2) arranged to identify each user equipment (UE1-UE4) in the first cell (1);

-the scheduler (2) arranged to identify in which cell segment (CS1, CS2) each user is positioned;

-the scheduler (2) arranged to allot a first time slot (TS1) to at least one user equipment (UE1) in a first cell segment (CS1) in the first cell (1);

-the scheduler (2) arranged to allot the first time slot also to at least one user (UE3) equipment in a second cell segment (CS2) in the first cell (1);

-the antenna system (Rx, Tx) arranged to send information from the base station (BS) simultaneously to all user equipments (UE1, UE3) allotted to the first time slot.

15. Arrangement according to claim 14, characterized in that the scheduler (2) is arranged to manage also a second cell (6) by communicating with the first base station (BS) or a second base

station communicating with a number of user equipments (UE1-UE4) in the second cell (6) via the first antenna system (Rx, Tx) or a second antenna system effective in one or more cell segments (Cs1, CS2) covering certain directions in the second cell (6), where the arrangement comprises;

-the first base station (Bs) or the second base station arranged to receive information from the user equipments (UE1-UE4) in the second cell (6), by means of the first antenna system (Rx) or the second antenna system;

- the first base station (Bs) or the second base station arranged to send the information to the scheduler (2);

-the scheduler (2) arranged to identify each user equipment (UE1-UE4) in the second cell (6);

-the scheduler (2) arranged to identify in which cell segment (CS1, CS2) each user equipment (UE1-UE4) is positioned;

-the scheduler (2) arranged to allot the first time slot (TS1) to at least one user equipment in a first cell segment in the second cell (6);

-the scheduler arranged to allot the first time slot (TS1) also to at least one user equipment in the second cell segment (CS2) in the second cell (6).

16. Arrangement according to claim 14 or 15, characterized in that the scheduler (2) is arranged to divide the cell (1, 6) into the cell segments (CS1, CS2) on the basis of intracell and/or intercell interference determined by the scheduler (2) by using spatial information about where each user equipment is situated in the cell.

17. Arrangement according to any one of claims 14-16, characterized in that the scheduler (2) is arranged to allot the time slots to the user equipments on the basis of intracell and/or intercell interference determined by the scheduler by using spatial information about where each user equipment is situated in the cell.

18. Arrangement according to any one of claims 14-17, characterized in that the antenna system (Tx) comprises an adaptive antenna arranged to transmitting into each cell segment using beam forming functions.

19. Arrangement according to any one of claims 14-18, characterized in that the arrangement is arranged to allot the first time slot (TS1) to only one user equipment in each cell segment (CS1, CS2) such that the antenna system sends (Tx) information to only one user equipment in each cell segment.

20. Method according to any one of claims 14-18, characterized in that the arrangement is arranged to allot the same time slot to two user equipments in at least the first cell segment (CS1).

21. Arrangement according to any one of claims 14-20, characterized in that the antenna system (Tx) is arranged to send information from the base station (BS) simultaneously to all user equipments allotted to the first time slot.

22. Arrangement according to any one of claims 14-21, characterized in that the scheduler (2) is arranged to use direction of arrival in order to identify the position of the user equipments (UE1-UE4).

23. Arrangement according to any one of claims 14-23, characterized in that the antenna system (Tx) is arranged to send simultaneously to all user equipments in the system allotted to the same time slot according to a time slot sequence.

24. Method according to any one of claims 14-23, characterized in that the scheduler (2) is arranged to allot the first time slot (TS1) and/or divide the cell (1, 6) into cell segments (CS1, CS2), based on the minimum intercell and/or intracell interference.